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GEORGE KIMBALL BURGESS

The death of Dr. George Kimball Burgess, Director of the Bureau of Standards, occurred suddenly on the morning of July 2. Doctor Burgess was stricken at his desk and death came within an hour. The immediate cause was a cerebral hemorrhage, following a similar attack last October.

Doctor Burgess was born at Newton, Mass., January 4, 1874, and came of an old and distinguished New England family. He was educated at the public schools of his native town and received the degree of Bachelor of Science from Massachusetts Institute of Technology in 1896. He pursued advanced scientific courses at the University of Paris from 1898 to 1900, and in 1901 that institution conferred upon him the degree of Doctor of Sciences with mention "tres Honorable," the highest grade of commendation given with the doctor's degree. His thesis was a redetermination of the constant of gravitation, using the torsion balance. From the time of his graduation Doctor Burgess was a constant student of the physical sciences, and has left a reputation for exact and brilliant work in many fields. After the completion of his studies at the University of Paris, Doctor Burgess served on the faculties of the University of Michigan and the University of California.

On June 8, 1903, he entered the service of the Bureau of Standards, only two years after its establishment. He achieved an international reputation in the fields of high-temperature measurement and metallurgy, being the first to use the optical pyrometer for the accurate measurement of the temperature of railroad rails during the process of hot rolling.

With his colleague, Dr. C. W. Waidner, then chief of the heat division of the bureau, he suggested in 1908 a natural reproducible standard of light based upon the black body radiation of a hollow tube immersed in molten platinum. (TECHNICAL NEWS BULLETIN No. 151, p. 107, and No. 170, p. 62.) After 24 years this is now recognized as one of the most fundamental and practical contributions to the field of photometry, and seems likely to be adopted as an international standard.

Upon the organization of the bureau's division of metallurgy in 1913, Doctor Burgess was appointed its chief by the director, Dr. S. W. Stratton. During the World War, Doctor Burgess was sent on a special mission to France where he obtained data concerning the most urgent types of research which should be taken up in this country. His duties carried him into the actual fighting lines and the first-hand information thus secured proved later to be invaluable.

In April, 1923, Doctor Burgess was appointed by President Harding to the post of Director of the Bureau of Standards, to succeed Doctor Stratton, who had accepted the presidency of Massachusetts Institute of Technology. In the nine years of Doctor Burgess's administration the bureau has grown in the value and variety of its work. He was particularly interested in every field in which the bureau could cooperate with American industries toward the solution of scientific and technical problems, and it was under his guidance that the research associate plan, by which industrial organizations are enabled to send to the bureau experts to work on problems in their particular fields was developed. This research-associate plan has proved one of the most valuable ways in which the Government cooperates with American manufacturers and has assured the prompt application of research results to manufacturing processes, with a better and less expensive finished product.

The welfare of the bureau's staff was always uppermost in Doctor Burgess's mind. He did much to promote its efficiency and to improve working conditions. Under his administration the value of the advanced educational courses conducted out of hours for the benefit of the younger members of the staff was greatly increased. In giving full credit to junior collaborators in scientific work under his direction, he set an example to be followed by everyone.

At the time of his death Doctor Burgess was president of the National Conference on Weights and Measures, and chairman of the Federal Specifications Board, the National Screw Thread Commission, and the Federal Fire Council. His term of office as chairman of the National Research Council had expired on June 30. He had recently been chosen chairman of the section on general interests of the International Association for Testing Materials. He was a past president of the American Society for Steel Treating, the Philosophical Society of Washington, the Washington Academy of Sciences, the American Society for Testing Materials, and the Cosmos Club. He was an honorary member of the American Foundrymen's Association and the Japanese Society of Mechanical Engineers, a director of the American Standards Association, and the National Geographic Society, a fellow of the American Association for the Advancement of Science, and a member of Sigmi Xi fraternity. In addition, he was a member of the National Academy of Sciences, American Institute of Mining and Metallurgical Engineers, National Advisory Committee for Aeronautics, Optical Society of America, American Physical Society, American Institute of Metals, the French Physical Society, and the Iron and Steel Institute of Great Britain. In addition to his degrees from Massachusetts Institute of Technology and the University of Paris, honorary degrees of doctor of engineering were conferred upon Doctor Burgess by Case School of Applied Science in 1923 and by Lehigh University in 1925.

Doctor Burgess was married on January 5, 1901, to Suzanne Babut of Paris, France, who survives him. He had no children.

Funeral services were held in Washington, D. C., at All Souls Unitarian Church at 5 o'clock on the afternoon of July 4. Interment took place at Newton, Mass., on July 5.

CONFERENCE OF STATE UTILITY COMMISSION ENGINEERS

The tenth annual conference of State utility commission engineers was held at the bureau on June 2 and 3, 1932. One or more engineers were present from the District of Columbia and each of the following States: Connecticut, Illinois, Iowa, Maryland, North Dakota, New Jersey, New York, West Virginia, Vermont, and Wisconsin. J. Howard Mathews, chief engineer, Commerce Commission, Illinois, was chairman of the conference.

The papers presented covered the following subjects: (1) Methods of grounding electric circuits, including lightning-arrester grounds, Russell G. Warner, Connecticut; (2) rural electrification standards, J. H. Mathews, Illinois; (3) potatoes and therms, E. R. Weaver, Bureau of Standards; (4) liquefied petroleum gas in the gas industry, M. T. Bennett, Wisconsin; (5) scope of work, methods, and personnel of commission engineering department, J. Franklin Meyer, Bureau of Standards; (6) uniform rules for bus operation, E. I. Rudd, Connecticut; (7) cost and reliability of Diesel-engine operation for small utilities, George Charlesworth, Iowa; (8) grade-crossing protection, J. G. Hunter, California. Copies of all the papers available have been sent to the engineering departments of public-service commissions not represented at the conference. Other commissions interested may obtain the papers upon application to the secretary of the

conference. Permission to publish any of the papers must be obtained from the author of the paper.

The conference selected the following members as an executive committee to arrange a program and select the time for the annual conference to be held in 1933: E. I. Rudd, chairman, Connecticut; R. H. Nexsen, vice chairman, New York; Harry Barker, Vermont; M. T. Bennett, Wisconsin; I. L. Reynolds, District of Columbia; and J. Franklin Meyer, secretary, Bureau of Standards.

NEW CIRCULAR ON SAFETY FOR THE HOUSEHOLD

Accidents in the home cause more fatalities every year than is usually realized, falls and burns accounting for large numbers of deaths. Bureau of Standards Circular No. 397, Safety for the Household, which has just been issued, is a discussion of the hazards arising in the home and what can be done to avoid the accidents which result from carelessness and inattention to appropriate precautions. The hazards from the use of gas and electricity, from fire and lightning, from the use of chemicals, as well as those of mechanical origin, are fully discussed, and many useful suggestions given for eliminating the avoidable hazards and for properly meeting those which seem to be unavoidable. The practical method for the resuscitation of persons who have come close to death through drowning, asphyxiation, or electrical shock is explained. Many of the accidents which are now occurring can be avoided by the proper construction of houses to resist fire, by proper precautions in the use of gas and electricity, by good housekeeping, and by conformity to the other suggestions made in the circular.

Precautions are described intending to give for each class of hazard a series of suggestions phrased generally in a positive form. In some cases, however, negative rules have been given to insure caution rather than fear against conditions which involve risk. Particular emphasis has been laid upon the reasons for certain risks. It is pointed out in some cases how a risk can be wholly or in part eliminated, for instance, having the frame of an electric washing machine permanently grounded. In this case, a person may safely touch a washing machine even if the floor is wet, as any accidental contact of a live electrical part with the frame of the machine will blow a fuse, which is the safety valve of the electrical system.

In some cases, strict attention to inherent risks is necessary. When boiling anything on the gas range, it must be watched so that it does not boil over and extinguish the gas flame. In this case, unburned gas would continue to flow. Manufactured gas used for cooking and illumination is poisonous, containing a large quantity of carbon monoxide, which is deadly if breathed in sufficient quantities.

Certain household appliances which have recently been introduced into American homes are considered, and numerous illustrations are included which aid greatly in understanding the text.

Copies of this circular may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents each.

STABILITY OF HAND-MADE PAPERS

Recent tests at the bureau of commercial hand-made book papers show that they have much the same range of stability of strength, under the heat test, as found in machine-made book papers.

Through the cooperation of a domestic dealer in such papers, 13 samples representative of the products of 5 different foreign countries were made available for the bureau's tests. The papers were tested for folding endurance before and after being subjected to a temperature of 100° C. for 72 hours. Two of the papers were unusually strong and were affected very little by the heat test. One of these, composed of rag fiber, had a folding endurance of 10,000 folds and the other, composed of typical Japanese fibers, probably mitsumata, withstood around 30,000 folds. The other papers, all composed of rag fibers, ranged in strength down to 3 folds, and in stability down to loss of around one-half of their initial folding endurance on heating.

PHYSICAL PROPERTIES AND WEATHERING CHARACTERISTICS OF SLATE

A paper based on laboratory studies and field inspections of the commercial slates during the past four years will appear in the September number of the Journal of Research. The laboratory studies covered tests on about 343 samples from 9 States. Field studies included the collection of 60 samples

of weathered slate from buildings ranging in age from 12 to 130 years.

Physical determinations include flexural strength, elasticity, toughness, abrasive hardness, absorption, porosity, density, and resistance to various conditions of weathering.

Average values obtained for various properties are as follows:

Modulus of rupture_lbs./in.²__	11, 700
Elasticity in flexture (E)_do___	13, 500, 000
Toughness _____inch__	. 192
Abrasive hardness (H_a)_____	7. 6
Absorption (by wt.)_per cent__	. 27
Porosity_____do___	. 88
Bulk density_____	2. 771
Weight (cu. ft.)_____pounds__	172. 9

Toughness was determined as the maximum deflection of a specimen three-sixteenth inch thick when supported on two knife-edges 16 inches apart and loaded through a third knife-edge at the middle. Abrasive hardness was obtained by grinding under controlled conditions on a cast-iron disk with No. 60 artificial corundum. The value H_a is computed as the reciprocal of the volume abraded. In comparison with other materials slate is somewhat harder than the oolitic limestones, but softer than most marbles.

Great differences in weather resistance were found for some of the materials, this factor depending more on the mineral composition than on the physical properties. Slates containing both calcite and pyrite are not apt to give long service where exposed to weather. Such slates may even show decay under some conditions when used for interior purposes. The process causing decay was found to be the conversion of calcite to gypsum, in which sulphur from the pyrite and oxygen from the air supply the necessary elements. The increase in molecular volume produces internal stresses in the slate sufficient to cause disintegration. Heat and moisture conditions accelerate this action hence slates affected by this type of weathering may prove less durable in warm climates than cold.

Weathering test procedures suitable for determining the relative durability of various slates have been developed which may form a logical basis for slate specifications.

HIDING POWER OF PAINT

A new board to be used in determining the hiding power of paint has been constructed. This consists of 18 white and 18 black, opaque, glass squares (4 inches square), laid together in checkerboard fashion. In order to get the top surface as level and uniform as possible, the glass squares were laid face down on a smooth level surface (a piece of plate glass), and the cement placed on the backs of the glass squares, thus building up from the back of the squares. A layer of neat cement was laid next to the squares, followed by a 3 to 1 sand-Portland cement mortar. After waiting for two weeks for the cement to harden, the board was turned over, face side up, resulting in an excellent surface for brushing and applying paint. The area of the board is 4 square feet. The reflection factor of the white squares is 87 per cent, and the black squares 5 per cent. The squares of glass are so laid that no edge or frame hampers the brush in sweeping across the entire surface of the board. The board may be used for either dry or wet hiding power.

EFFECT OF PROTECTIVE COATINGS ON ENDURANCE PROPERTIES OF STEEL

The effect upon the resistance of metals to fatigue, of coating them with some other metal, depends upon the nature of the bond between the metal and the coating, as explained in Research Paper No. 454, which will be published in the July number of the Bureau of Standards Journal of Research.

It has been shown by numerous investigations that the surface condition of a metal is a very important factor in determining its resistance to repeated stresses. Surface alterations caused by corrosion, either previous to or coincident with stressing, are known to cause a marked lowering of the normal endurance limit of a metal. Metallic coatings are widely used to protect iron and steel from corrosion and it has been shown that such coatings may appreciably improve the resistance of metals to simultaneous stress and corrosion.

It is of interest to know what effect protective metallic coatings may have upon the endurance limit of metals when corrosion is not involved. A study has recently been made at the bureau of the effect of hot-dipped galvanized coatings and of electrodeposited zinc coatings upon the endurance limits of three ferrous materials—open-hearth ingot iron containing 0.02 per cent carbon and two plain carbon steels containing 0.45 per cent and 0.72 per cent carbon.

Endurance limits were determined on specimens of each material that were (1) polished but uncoated, (2)

galvanized by the hot-dip process, (3) zinc electroplated, and (4) acid pickled as for galvanizing. The ingot iron was tested in the hot-rolled condition. Both of the carbon steels were tested in the normalized and annealed, in the quenched, and in the tempered conditions. Fatigue tests of the galvanized and the uncoated specimens were made on both R. R. Moore rotating beam, and on Haigh axial loading fatigue, testing machines. The acid pickling caused a decrease in endurance limit of as much as 40 per cent, the greatest decrease occurring in the quenched steels. The presence of a galvanized coating caused a still greater decrease in most of the materials, the maximum, 42.5 per cent, being obtained in the quenched or the tempered steels. The endurance limits of the electroplated materials were equal to or greater than those of the polished, uncoated materials.

The difference in the effects caused by the two types of coating is believed to be a result of the differences in the nature of the bond between zinc and steel and differences in structure and hardness of the two coatings.

THERMAL EFFECTS IN ELASTIC AND PLASTIC DEFORMATION

In a paper by M. F. Sayre attention is called to the fact that when a material is subjected to a compressive stress the temperature rises and when it is subjected to a tensile stress the temperature drops. This thermal effect is independent of any elastic defect in the material, but due to it alone errors of 0.2 per cent are possible in measuring loads with elastic calibrating devices. Present specifications for the use of elastic calibrating devices do not adequately cover the question of time limits necessary to keep the errors caused by thermal effects within the limits required by the specifications.

For the past few years the bureau has been certifying that proving rings meet a specification which requires an accuracy of one-tenth of 1 per cent at capacity load. At the time experiments were first started with proving rings it was found that if a ring could pass an overload test of 10 per cent satisfactorily no errors as great as one-tenth per cent could be caused by elastic creep, elastic drift, and set. No provision was made to avoid the thermal effects mentioned because a rough estimate indicated that the temperature equalization would take place very rapidly. This was verified by the behavior of all rings up to 100,000-pound capacity.

Because it was felt that Sayre's paper might cause undue suspicion of elastic calibrating devices, the time lag on a 300,000 pound capacity proving ring was measured by means of a 10:1 lever system using a Last Word dial. Motion pictures of the dial and a stop watch were taken. The curve obtained shows the half creep time for a ring of this capacity to be about 13 seconds, and the three-quarter creep time to be about 33 seconds. These values are in good agreement with the theory. It takes only about 50 seconds for the effect to disappear to within the experimental error of reading the ring.

The 300,000-pound capacity proving rings are the largest the bureau has yet calibrated. It is pointed out that even for them no special precaution is necessary. It is also shown that $3b^2$ (inches^2) seconds gives with sufficient accuracy the approximate half-creep time of the thermal creep for a carbon or low alloy steel bar suddenly bent, where b is the thickness of the bar. Sayre's value, $10b^2$ (inches^2) seconds is considerably too large.

USE OF ALPHA-BENZOINOXIME IN THE DETERMINATION OF MOLYBDENUM

Present procedures used for the determination of molybdenum, except the colorimetric method which is applicable to only small amounts, require a number of tedious and time-consuming operations before the actual determination of that element can be accomplished. It has been found at the bureau that when alpha-benzoinoxime, a reagent originally proposed for the determination of copper, is added to cold sulphuric, hydrochloric, or nitric-acid solution of sexivalent molybdenum, not only is molybdenum quantitatively precipitated but it is readily separated from a lare number of other elements such as copper, lead, bismuth, tin, arsenic, antimony, iron, titanium, chromium, vanadium, and many others. Tungsten and palladium, which are also quantitatively precipitated by the reagent should be removed, if present, before attempting the precipitation of molybdenum. The interference of silicon and tantalum is of no great importance and can easily be avoided. As applied to ores and similar material, precipitation with alpha-benzoinoxime is effected directly after removal of lead, silica, etc., by dehydrating with sulphuric acid. The

resulting precipitate, after appropriate washing, is dried, ignited, and weighed as molybdenum trioxide. The ignited oxide is dissolved in dilute ammonium hydroxide, acidified with hydrochloric acid, and treated with cinchonine. Any resulting precipitate of tungsten is filtered, ignited, weighed, and deducted from the weight of molybdic oxide already obtained. In the case of steel, precipitation is made directly after solution and oxidation of the sample by means of sulphuric and nitric acids. The treatment of the precipitate is the same as that outlined for ores.

This method will be described in detail in Research Paper No. 453 in the July number of the Bureau of Standards Journal of Research.

USE OF VOLTAGE DIVIDERS WITH CATHODE-RAY OSCILLOGRAPHS

To modern investigators of rapidly changing electrical phenomena, the most useful tool is probably the cathode-ray oscillograph. This instrument makes it possible to measure time intervals of a fraction of a millionth of a second. One of its widest applications is the measurement of voltages and their variation with time. It is in this respect that it plays an important rôle in the researches of the automotive ignition laboratory of the bureau.

Unfortunately, the voltage that can be measured directly with the cathode-ray oscillograph is limited; hence it is necessary to divide the applied voltage and measure only a known fraction of the total voltage. Research at the bureau has resulted in the development of a capacitance voltage divider, suitable for a wide variety of uses. This divider will be described in Research Paper No. 460, Voltage Dividers for Use with Cathode Ray Oscillograph, which will be published in the July number of the Bureau of Standards Journal of Research.

In this paper the general requirements for a satisfactory voltage divider are stated. It is there shown mathematically that the divider described is theoretically correct and that it therefore satisfies the requirements. Following a section devoted to a description of apparatus used, including the cathode-ray oscillograph, a number of oscillograms are given to show the results obtained with the divider in various applications. In the course of the investigation a great deal of attention was paid to oscillograph technique, and a section of the paper is devoted to this subject. The paper concludes with a discussion of calibration of the voltage divider.

NATIONAL HYDRAULIC LABORATORY

The bureau's new hydraulic laboratory building was turned over to the Government by the contractor on March 12, 1932. Since that time the members of the laboratory staff have been occupied with the design and installation of the equipment which is necessary to the carrying out of experimental work.

Five centrifugal pumps having a total capacity of about 60,000 gallons per minute have already been purchased and installed. At the present time, work is progressing on the installation of the piping for these pumps, of constant level tanks, sluice gates, and a 5-ton hoist. A considerable amount of instrumental equipment for operating the laboratory and for use in hydraulic investigations is on order.

Economy in the use of water was made a feature of the design of this laboratory. Instead of drawing water from the city's mains, passing it through the experimental equipment and then wasting it, two large storage basins which will contain a total of about 1,250,000 gallons of water have been provided as sources of supply for the experiments. The water will be pumped from these storage basins to be used again. It is estimated that the entire water supply will be circulated many hundreds of times before it will be so contaminated that fresh water must be supplied.

The first scientific investigation to be conducted in the new laboratory relates to the friction losses resulting from the flow of water around pipe bends. The Bureau of Reclamation of the Department of the Interior has requested that the Bureau of Standards undertake an investigation of this subject, since these bend losses are of real economic importance in the design of large lines for carrying irrigation water. Members of the hydraulic laboratory staff are already preparing plans for the experimental work, and it is anticipated that the first actual experiments can be commenced in September of this year.

NEW AND REVISED PUBLICATIONS ISSUED DURING JUNE, 1932

Journal of Research[1]

Bureau of Standards Journal of Research, vol. 7 (RP Nos. 329 to 395, inclusive), bound in cloth, $2.75 ($3.50, foreign).

Bureau of Standards Journal of Research, vol. 8, No. 6 (RP Nos. 446 to 452, inclusive). Price, 40 cents. Obtainable by subscription.

Research Papers[1]

(Reprints from Journal of Research)

RP417. Note on international comparison of X-ray standards; L. S. Taylor. Price, 5 cents.

RP426. Some physical properties of levulose and its estimation by copper reduction methods; R. F. Jackson and J. A. Mathews. Price, 10 cents.

RP427. The optical requirements of airplane mapping; I. C. Gardner. Price, 5 cents.

RP428. Note on the moving-boundary method for measuring transference numbers. A pycnometer for determining the volume change occurring at an electrode and its application to a cathode of silver chloride in a solution of potassium chloride; E. R. Smith. Price, 5 cents.

RP429. Radio field-intensity measurements at frequencies from 285 to 5,400 kilocycles per second; S. S. Kirby and K. A. Norton. Price, 10 cents.

RP431. Capacitance and power factor of a mica capacitor as measured at the Bureau of Standards and the National Physical Laboratory; H. L. Curtis, C. M. Sparks, L. Hartshorn, and N. F. Astbury. Price, 10 cents.

RP432. Isolation and determination of normal heptane and of methylcyclohexane in a mid-continent petroleum including a determination of the phase equilibrium diagram for the condensed system normal heptane-methylcyclohexane; M. M. Hicks-Bruun and J. H. Bruun. Price, 10 cents.

RP436. Manufacture of calcium gluconate by the electrolytic oxidation of dextrose; H. S. Isbell, H. L. Frush, and F. J. Bates. Price, 5 cents.

RP442. Effect of antimony on the mechanical properties of a bearing bronze; C. E. Eggenschwiler. Price, 5 cents.

Circulars[1]

C397. Safety for the household. Price, 15 cents. (Supersedes C75.)

Simplified Practice Recommendations[1]

R125–31. Waxed tissue paper. Price, 10 cents.

R126–31. Set-up boxes (used by department and specialty stores). Price, 10 cents.

R129–31. Notion and millinery paper bags (used by department and specialty stores). Price, 10 cents.

Commercial Standards Monthly[1]

Commercial Standards Monthly, vol. 8, No. 12, June, 1932. Price, 10 cents. Obtainable by subscription.

Technical News Bulletin[1]

Technical News Bulletin No. 182, June, 1932. Price, 5 cents. Obtainable by subscription.

LETTER CIRCULARS[2]

LC328. Soil corrosion of underground piping systems.

LC329. Determination of the corrosivity of soils.

LC330. Protective coatings for underground piping systems.

LC331. Inks. (Contains formulas for many kinds of inks.)

LC332. Publications relating to photography. (Replaces LC319.)

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[1] Send orders for publications under this heading only to the Superintendent of Documents, Government Printing Office, Washington, D. C. Subscription to Technical News Bulletin, 25 cents per year (United States and its possessions, Canada, Cuba, Mexico, Newfoundland, and Republic of Panama); other countries, 40 cents. Subscription to Journal of Research, $3 per year; other countries, $3.75. Subscription to Commercial Standards Monthly, $1 per year; other countries, $1.25.

[2] Letter circulars are in mimeographed form and are designed primarily to answer specific inquiries. The supply is necessarily limited so that, in general, but 1 copy can be sent in answer to each request. Copies are available only on application to the Bureau of Standards, Washington, D. C. No mailing list is maintained for letter circulars and complete sets of back numbers can not be furnished.

OUTSIDE PUBLICATIONS [3]

Essais magnétiques industriels. R. L. Sanford; Congrès International d'Électricité Paris, 1932, 2° section, rapport No. 18 (États-Unis); June, 1932.

Measurement of the electrical conductance of nonmetallic pipe coatings. E. R. Shepard; American Gas Journal (New York, N. Y.), vol. 136, p. 22, June, 1932.

Development of specifications for sieves in the United States. L. V. Judson; ASA Bulletin (American Standards Association, New York, N. Y.), vol. 3, No. 6, p. 196; June, 1932.

Dental research at the National Bureau of Standards. G. C. Paffenbarger; Xi Psi Phi Quarterly (Minneapolis, Minn.), May, 1932.

Effect of temperature on human hair. C. R. Brown; American Hairdresser (New York, N. Y.), March, April, and May, 1932.

Altitude laboratory tests of aircraft engines. H. K. Cummings and E. A. Garlock; Aeronautical Engineering (American Society of Mechanical Engineers, New York, N. Y.), vol. 4, No. 2, p. 53; April–June, 1932.

Knock characteristics of motor fuels. N. R. White and H. K. Cummings; United States Bureau of Mines (Washington, D. C.), Report of Investigations No. 3175, pp. 10–12, 26–31; May, 1932. (Free on application to Bureau of Mines.)

Variation of photographic sensitivity with different light sources. R. Davis and G. K. Neeland; Journal, Society of Motion Picture Engineers (New York, N. Y.), vol. 18, No. 6, p. 732; June, 1932.

X-ray analysis of rubber. H. J. McNicholas; The Vanderbilt 1932 Rubber Handbook (The R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y.); June, 1932.

Electrophoresis and pH; what they mean to the mill man. W. D. Appel; Wool and Cotton Reporter (Boston, Mass.), vol. 46, p. 11; May 19, 1932.

The following preprints of papers presented at the June meeting of the American Society for Testing Materials (Philadelphia, Pa.) have been issued:

Some factors affecting the Preece test for zinc coatings. H. H. Walkup and E. C. Groesbeck; Preprint No. 39.

Effect of zinc coatings on the endurance properties of steel. W. H. Swanger and R. D. France; Preprint No. 40.

Mechanical properties of white-metal bearing alloys at different temperatures. H. K. Herschman and J. L. Basil; Preprint No. 46.

Factors affecting the physical properties of cast red brass (85 Cu, 5 Zn, 5 Sn, 5 Pb). H. B. Gardner and C. M. Saeger; Preprint No. 50.

The system CaO–Na_2O–Al_2O_3. L. T. Brownmiller and R. H. Bogue; Portland Cement Association Fellowship (Bureau of Standards, Washington, D. C.), paper No. 25; June, 1932.

The color range of common brick. J. W. McBurney; Journal, Clay Products Institute of America (Washington, D. C.), vol. 1, No. 2, p. 31; June, 1932.

How the National Bureau of Standards and the American Standards Association Cooperate. R. A. Martino; ASA Bulletin (American Standards Association, New York, N. Y.), p. 176; June, 1932.

The following articles were published in the United States Daily (Washington, D. C.):

Construction of schoolhouses to standard specifications. J. S. Taylor. Vol. 7, No. 82, p. 8; June 8, 1932.

Aiding harassed home owners to retain property. A. J. Mertzke. Vol. 7, No. 86, p. 8; June 13, 1932.

Use of helium in study of atom structure. F. G. Brickwedde. Vol. 7, No. 86, p. 8; June 13, 1932.

Liquefaction of helium for test purposes. F. G. Brickwedde. Vol. 7, No. 87, p. 8; June 14, 1932.

Commercial standards for testing paper. B. W. Scribner. Vol. 7, No. 91, p. 8; June 18, 1932.

Study of age resistance of paper. B. W. Scribner. Vol. 7, No. 92, p. 8; June 20, 1932.

Simplified practice applied to paper. E. W. Ely. Vol. 7, No. 93, p. 8; June 21, 1932.

Color experiment in production of sanitary wares. G. W. Wray. Vol. 7, No. 97, p. 6; June 25, 1932.

[3] Outside publications are not for distribution or sale by the Government unless otherwise noted. Requests should be sent direct to publishers.

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